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Amendments to the Claims:

1-71 (cancelled)

72. (Currently Amended) An vehicle data system for processing and displaying vehicle data transmitted through a bus connector of a data bus on an electronically controlled engine operating in accordance with a predetermined bus protocol, comprising

- a. a handheld computer including a memory for storing operating system software adapted to operate said handheld computer in accordance with a data protocol which is different from the vehicle bus protocol, a handheld microprocessor for executing the operating system software and an external data port which is physically incompatible with the bus connector of the data bus and which is connected to said handheld microprocessor to allow the vehicle data when properly formatted to pass into said handheld computer; and
- b. an adapter, having an adapter housing, for creating a data pathway between the bus connector and said external data port including
 - i. a data port connector positioned on said adapter housing for ~~connection~~ direct coupling with said external data port of said handheld computer,
 - ii. a bus compatible connector for connection with the bus connector, and
 - iii. an adapter microprocessor positioned on said adapter housing and connected via the data pathway with said bus compatible connector, and adapter memory for storing a microprocessor-readable set of instructions for protocol conversion of the data received from the vehicle bus for processing by said handheld computer and supplied to said handheld computer through said data port connector,

wherein the adapter housing is capable of being releasably affixed to said handheld computer to form an integral handheld vehicle data system package when said data port connector is coupled to said external data port of said handheld computer, and

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wherein [[the]] signal levels of the vehicle data appropriate for transmission by the vehicle bus and for processing by said handheld computer are respectively different and wherein said adapter includes level adjustment means for converting the signal levels of the vehicle data to the appropriate levels as the vehicle data passes between the vehicle bus and said handheld computer.

73. (New) The vehicle data system as defined in claim 72, wherein said adapter further includes

- a. a flexible cable having said bus compatible connector at one end and a cable connector at the other end, and
- b. said adapter housing including a cable compatible connector for engagement with said cable connector to complete the data pathway between the data bus and said adapter microprocessor.

74. (New) The vehicle data system as defined in claim 73, wherein the data bus transfers data messages containing information regarding the engine, and wherein said adapter microprocessor operates to convert the vehicle data between the bus protocol and the data protocol of said handheld computer.

75. (New) The vehicle data system as defined in claim 74, wherein said adapter microprocessor determines the start and stop of messages received from the data bus and said adapter microprocessor further operates to add message identifiers to the vehicle data conveyed to said handheld computer through said external data port, whereby the amount of processing that the handheld computer is required to undertake for data monitoring and extraction from the data bus is minimized.

76. (New) The vehicle data system as defined in claim 75, wherein said handheld computer includes application software for permitting detection of said message identifiers added to the vehicle data by said adapter microprocessor.

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77. (New) The vehicle data system as defined in claim 76, wherein the vehicle bus operates in accordance with a J1587 protocol.

78. (New) The vehicle data system as defined in claim 76, wherein the vehicle bus operates in accordance with a J1939 protocol.

79. (New) The vehicle data system as defined in claim 76, wherein the data protocol of said handheld computer is an RS232 data link.

80. (New) The vehicle data system as defined in claim 77, wherein the vehicle bus employs a J1708 data link.

81. (New) The vehicle data system as defined in claim 75, wherein the message identifier includes a delimiting header block having a synchronization sequence and a message length.

82. (New) The vehicle data system as defined in claim 81, wherein the application software within said handheld computer operates to synchronize with the messages received from said adapter employing the header block added by said adapter.

83. (New) The vehicle data system as defined in claim 76, wherein said adapter software allows engine operating conditions to be monitored.

84. (New) The vehicle data system as defined in claim 83, wherein said adapter software allows one or more of the following engine operating conditions to be monitored: throttle position, engine load, torque, oil pressure, boost pressure, intake manifold temperature, coolant temperature, coolant level, fuel rate, and engine speed.

85. (New) The vehicle data system as defined in claim 76, wherein said handheld computer further including conduit software for transferring data to and from the handheld computer and a personal computer.

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86. (New) The vehicle data system as defined in claim 85, wherein the conduit software is a Windows DLLTM that is called by a PalmTM HotSyncTM manager during the handheld computer synchronization events whereby said conduit software transfers data acquired from the handheld computer to the personal computer where it can then be further analyzed.

87. (New) The vehicle data system as defined in claim 81, wherein the message identifier includes a three-byte sequence: [112][254][len][J1587Message] where J1587 Message is a standard J1587 formatted message.

88. (New) The vehicle data system as defined in claim 72, wherein said adapter software allows said adapter system to receive messages from the handheld computer including a message identifier having a three-byte sequence as follows: [120][254][len][J1587 Message], where J1587 message is a standard J1587 formatted message.

89. (New) The vehicle data system as defined in claim 88, wherein said adapter software allows said adapter to buffer messages.

90. (New) The vehicle data system as defined in claim 88, wherein said adapter software causes messages received from the handheld computer to be unpacked and scheduled for transmission to the vehicle bus whenever a complete message is present and the bus has been inactive for the required amount of time based on the priority of the message.

91. (New) The vehicle data system as defined in claim 88, wherein said adapter software causes the default priority of all adapter transmitted J1587 messages to be 8 unless three consecutive collisions occur whereupon said adapter software shall reschedule the colliding message by randomly selecting a different message priority.

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92. (New) The vehicle data system as defined in claim 72, wherein data messages are arranged in a queue and said adapter software monitors each message queue and maintains the maximum depth each queue has reached.

93. (New) The vehicle data system as defined in claim 72, wherein said adapter software detects spurious interrupts should they occur.

94. (New) The vehicle data system as defined in claim 72, wherein said adapter software maintains an indication of the available throughput of said adapter microprocessor.

95. (New) The vehicle data system as defined in claim 72, wherein said adapter software transmits a status message at predetermined intervals, said status message contains at least one or more of the following firmware major and minor version, message queue depths, spurious interrupt indication, and the latest throughput value.